

I CLAIM:

1. A metallic leadframe structure for use with a semiconductor chip intended for operation in a changing magnetic field, comprising:
- 5 a chip mount pad having at least one slit penetrating the whole thickness of said pad and substantially traversing the area of said pad from one edge to the opposite edge; and
- 10 said slit wide enough to interrupt electron flow in the pad plane, but not wide enough to significantly reduce thermal conduction in a direction normal to said pad plane, whereby said slit is operable to disrupt eddy currents induced
- 15 in said pad by said changing magnetic field.
2. The leadframe according to Claim 1 wherein said slit has a width from about 0.01 to 0.5 mm.
3. The leadframe according to Claim 1 wherein said structure comprises a sheet-like starting configuration
- 20 having a thickness in the range from about 100 to 300  $\mu\text{m}$ .
4. The leadframe according to Claim 3 wherein said sheet-like starting configuration is selected from a group of metals consisting of copper, copper alloy, brass,
- 25 aluminum, iron-nickel alloy, and invar.
5. The leadframe according to Claim 1 wherein said pad has an area larger than said chip intended for mounting.
6. The leadframe according to Claim 1 wherein said pad has an area smaller than said chip intended for mounting.
- 30 7. The leadframe according to Claim 1 wherein said chip has an integrated circuit including a Hall device.
8. A metallic leadframe structure for use with a

semiconductor chip intended for operation in a changing magnetic field, comprising:

a chip mount pad having a plurality of slits in a configuration operable to suppress eddy currents induced in said pad by said changing magnetic field;

each of said slits wide enough to interrupt electron flow in the pad plane, but not wide enough to significantly reduce thermal conduction in a direction normal to said pad plane.

9. The leadframe according to Claim 8 wherein said plurality of slits is configured approximately parallel or approximately star-burst-like, or in any pattern suitable for suppressing the origin of eddy currents, while preserving the mechanical stability and thermal conduction of said leadframe.

10. A semiconductor device intended for operation in a changing magnetic field, comprising:

a leadframe comprising a chip mount pad having at least one slit in a configuration operable to suppress eddy currents induced in said pad by said changing magnetic field;

an integrated circuit chip, having an active and a passive surface;

said passive surface attached to said mount pad by a polymeric material; and

said active surface having a Hall structure including current and voltage terminals integrated into said circuit, whereby said changing magnetic field can be measured without diminution by said eddy currents.

11. The device according to Claim 10 further having an

integrated current conductor in the proximity of said Hall structure, said conductor operable to conduct a changing electric current, creating said changing magnetic field normal to the plane of said Hall structure.

12. The device according to Claim 10 further comprising leadframe segments having their first end near said mount pad and their second end remote from said mount pad.

13. The device according to Claim 12 further comprising bonding wires interconnecting said Hall current and voltage terminals and respective first ends of said lead segments.

14. The device according to Claim 13 further comprising encapsulation material surrounding said chip, said bonding wires and said first ends of said lead segments, while leaving said second ends of said lead segments exposed, whereby said second ends are suitable for solder interconnection to other parts.

15. The device according to Claim 13 wherein said bonding wires are selected from a group consisting of gold, copper, aluminum, and alloys thereof.

16. The device according to Claim 14 wherein said encapsulation material is a polymeric material selected from a group consisting of epoxy-based molding compounds suitable for adhesion to said active chip surface and said leadframe.

17. The device according to Claim 14 wherein said solder attachment comprises solder materials selected from a group consisting of tin/lead, tin/indium, tin/silver, tin/bismuth, and conductive adhesive compounds.

18. A method of measuring the accurate amplitude of a

changing electric current flowing through a conductor,  
comprising the steps of:

- 5       providing an integrated circuit chip having an  
active and a passive surface, said active surface  
having an integrated circuit, said conductor and  
an integrated Hall structure;
- providing a metallic leadframe having a chip mount  
pad reducing or eliminating eddy currents in the  
vicinity of said Hall structure;
- 10       assembling said chip and said leadframe;  
initiating said changing electric current through  
said conductor, thus creating a changing magnetic  
field normal to the plane of said Hall structure;  
measuring the changing voltage induced in said Hall  
15       structure by said changing magnetic field;  
calculating the strength of said changing magnetic  
field, undiminished by said eliminated eddy  
currents, thereby determining the accurate  
amplitude of said changing electric current  
20       causing said changing magnetic field.
19. The method according to Claim 18 wherein said changing  
current is an alternating current.
20. The method according to Claim 18 wherein said step of  
assembling comprises the steps of:
- 25       attaching said passive chip surface to said pad chip  
mount pad;  
wire bonding said Hall structure to said leadframe;  
and  
encapsulating said assembled chip.
- 30 21. A method of measuring the accurate amplitude of a  
changing electric current, comprising the steps of:  
providing an integrated circuit chip having an

active and a passive surface, said active surface  
having an integrated circuit and an integrated  
Hall structure;

5 providing a metallic leadframe having a chip mount  
pad reducing or eliminating eddy currents in the  
vicinity of said Hall structure;

assembling said chip and said leadframe, and  
packaging said assembly;

10 positioning said packaged assembly in the changing  
magnetic field created by said changing electric  
current such that said changing magnetic field is  
normal to the plane of said Hall structure;

measuring the changing voltage induced in said Hall  
structure by said changing magnetic field;

15 calculating the strength of said changing magnetic  
field, undiminished by said eliminated eddy  
currents, thereby determining the accurate  
amplitude of said changing electric current  
causing said changing magnetic field.

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